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Learning Styles of Fourth Year Female Medical Students in King Abdulaziz University

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Abstract

Fourth year female medical students in King Abdulaziz University faced different teaching methods throughout their educational life before joining the medical faculty. After joining the faculty, a lot of students start to complain of decreased their levels. We conduct a cross sectional study to determine the learning styles preference of fourth year female medical students in King Abdulaziz University and it was done on our sample between 14-Sep-2014 to 10-Jan-2015. A hard copy of the 40 items Honey and Mumford questionnaire with a brief description of each learning style has been distributed among the students. The response rate was 94.5%. By using version 16 of the SPSS, the mean was calculated. Analysis of the data showed that the learning styles preference of the students was as the following; reflectors (29.34%, mean=7.83), followed by theorists (26.98%, mean=7.20) then pragmatists (25.57%, mean=7) and then activists (18.10%, mean=4.83). The teaching staff should be informed about the result to help them planning the courses and modulate their teaching styles to match the variations of students learning styles. Also, trying to broadens the horizon of students beyond their predominant learning style in order to be professional learners through their educational life.

Keywords: Learning styles, Honey and Mumford questionnaire, King Abdulaziz University, Medical Students.

INTRODUCTION

Learning style is the way that an individual naturally accustomed to use in understanding information throughout their learning journey. Each individual differs than the other in the way of receiving information [1]. Learning how to learn is the most important ability since it sets up the hallway to everything else someone wants to develop [2]. Being aware of the personal learning style can influences the educational life and makes it more enjoyable, effective and professional. In addition, it can help the students to gain more confidence and achieve better.

Fourth year female medical students in King Abdulaziz University (KAU) faced different teaching methods throughout their educational life starting from the elementary school until now. Most of the time, it was teacher centered education in whichthe teacher directs the class and controls the teaching process[3]. An obvious fluctuation was noticed in their levels and grades when they joined the medical field and many of them complained of facing some struggles. These could be related to teaching methods, teachers, teaching styles that may differ from the students' learning styles and other struggle from other factors such as curriculum planning, lack of time management skills, huge number of students in one class.

Many instruments have been developed to determine the learning style of an individual, one of these instruments is a questionnaire developed by Peter Honey and Alan Mumford based upon the work of Kolb [2]. There are two forms of the questionnaire: either 80 items or 40 items [4]. Forty items questionnaire was used because it is ideal for people who have not previously given much consideration to how they learn, it takes lesser time to complete and calculate the score, it has fewer suggestions which help the responders to concentrate and the statements are precise and convenient to more variant responders [4].

According to the results of the questionnaire, there are four learning styles: activist, theorist, pragmatist and reflector. Each style characterized as following: [2,5]

Activist are those peoples who prefer to learn by doing. They are not afraid of trying new things. They are excited and act without considering the consequence. They involve themselves without hesitation in new

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experiences. Their day is busy and they do not like to stick in the same routine so they always look for new things to try.

Theorist prefer to realize the theory behind the actions. They think systematically and logically. They like to analyze and synthesize the data. They tend to solve problems step by step in logical approach. They frequently ask if that thing make sense or if it is logic.

Pragmatist prefer to see how things will work in real life. They act quickly and confidently on applying ideas that attract them. They look for new things to apply. They deal with the problems as challenges. Theories and experiments bother them if will not work in practice, since they are realistic and practical.

Reflectors prefer to observe and think in what happens before they act. They stand back to watch and study the situation from different angles. They take time as long as they can to collect data before they reach the conclusion. They are cautious and methodical. They prefer to take all experiences of all people in all times in their consideration.

Several researches have been done using Honey and Mumford questionnaire. In 2001, a study about learning preferences and styles on general practice registrars took place in Wessex region in UK to determine the nature of registrars which reported that interactive learning with feedback is preferred. The Honey and Mumford learning styles questionnaire mean scores fell within the reflector-theorist quadrant [6]. In 2011, a longitudinal study was done on undergraduate nursing students at an Irish University by administering the questionnaire to a sample of students at their first and final year, the result showed that the preferred learning style is reflector (69% in the first year and 57% in the final year) [7].

In 2013, other study has been done in the Army Medical College in Pakistan to compare between undergraduate and postgraduate medical students' learning styles. The study showed statistically significant difference between the two groups, 45% of undergraduate students were very strong activists while 38% of postgraduate students were strongly reflectors and 35% were theorists [8]. In 2014, at Queen's University Belfast, a study on first year medical and dental students suggested that the learning style influence the academic performance in different forms of assessment. The result showed that the learning styles of students vary but it has a little effect on academic performance [9].

To the best of our knowledge, no study has been done in King Abdulaziz University in Jeddah, Saudi Arabia by using Honey and Mumford learning styles questionnaire. This study was performed to determine the learning styles' preference of female medical students in KAU.

MATERIALS AND METHODS

A cross sectional study was performed on fourth year female medical students in KAU between 14 September 2014 to 10 January 2015 after receiving the ethical approval from the research committee. A hard copy of the 40 items Honey and Mumford questionnaire with a brief description of each learning style has been distributed among the students (see questionnaire appendic). The students were already divided into two groups according to the curriculum, a list of their names were printed and used to ensure the participation of all students. The first group received the questionnaire between 14 September 2014 and 23 October 2014. At the end of their class, they were asked by a teaching staff member - who welcomed to help - to stay and fill in the questionnaire. It took around 15 minutes from each student to fill in the questionnaire and a total of around 25 minutes to collect them all. The absent students received the questionnaire individually and were asked to return it when they completed it. The second group received the questionnaire individually between 30 November 2014 and 10 January 2015 and they were asked to complete it as soon as possible. For both groups, the names of each student received the questionnaire were recorded, and those who did not return it were asked to return it kindly. For each statement of the questionnaire, the student should have ticked it if she agreed or crossed it if she disagreed. To calculate the score, she had to put 1 if she ticked it or nothing if she crossed it next to the statement number in the scoring sheet which had 4 columns. Each column represented a learning style and included 10 statements' numbers. The student then should summed the ones in each column. The score must be between 0 to 10 for each learning style. 183 out of 184 students received the questionnaire. The number of completed questionnaires was 173 questionnaires. By using SPSS version 16, descriptive statistics was obtained to calculate the mean and the standard deviation of the results.

RESULTS

The response rate was 94.5%. Analysis of the data showed that learning styles preference of the students was as the following as seen in Table 1 and Figure 1; reflectors (29.34%, mean=7.83), followed by theorists (26.98%, mean=7.20) then pragmatists (25.57%, mean=7) and the least preferred style was activists (18.10%, mean=4.83).

Table 1: The learning styles preference of fourth year female medical students

Statistical analysis of the data				
N	Theorist	Pragmatist	Activist	Reflector
Valid	173	173	173	173
Missing	0	0	0	0
Mean	7.2023	6.8266	4.8324	7.8324
Median	7.0000	7.0000	5.0000	8.0000
Mode	7.00	7.00	5.00	9.00
Std. Deviation	1.72181	1.85334	2.21010	1.91101
Variance	2.965	3.435	4.885	3.652

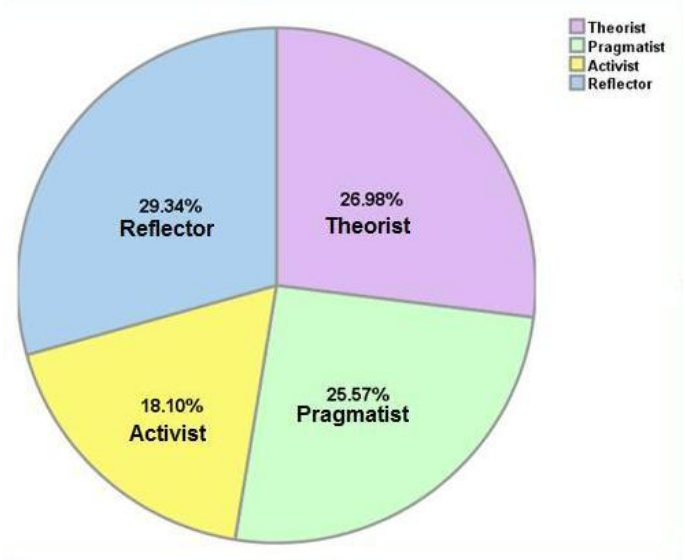

Figure 1: Percent of Learning StylesPreference of Fourth Year Female Medical Students

DISCUSSION

The response rate was very high due to the distributing method that depended on ensuring the participation of all students by asking them kindly to fill in the questionnaire.To the best of our knowledge, this is the first study of its kindthat focused on female medical students'

learning styles by using Honey and Mumford learning styles questionnaire. There was a previous study which used Honey & Mumford Learning Styles Questionnaire performed in Pakistan at Army Medical College in Rawalpindi city to compare learning styles of undergraduate and postgraduate medical students. That comparative study was the first study performed on medical students alone reported in literature which showed that reflector was the predominant learning style of postgraduates medical students and the second preference is theorist for both undergraduates and postgraduates students [8]. According to our results, the preferred learning style was reflector which was also the preferred learning style in numbers of previous studies done by Fleming *et al.* (2011) [7] and Wilkinson *et al.* (2014) [9]. The second preference was theorist which concurred with Wilkinson *et al.* (2014) [9]. Lesmes-Anel *et al.* (2001) [6] showed that the reflector–theorist quadrant contained most responders and wide distribution of scores. While the second preference for Fleming *et al.* (2011) [7] found to be activist in the first year and pragmatist in the final year, the theorist style found to be the least preference learning style for both years.

In KAU, students choose their specialty after passing the preparatory year and they get accepted in the faculties according to their grades. The medical faculty is well known as the faculty which requires the highest grades and the students who join it considered to be the top students. However, many students after joining the faculty start to complain of a decline in their levels because of the quality of learning outcomes achieved is dependent to a significant extent on the learning activities that learners used to do [10]. This research was performed to determine the learning style preference of the students which could help them to understand the reason of their complaint. The results did not show much difference between the different styles except for the activist which found to be the lowest. This could be attributed to the teachingmethods they used to have at schools which mainly was teacher centered rather than student centered which can help them improve their skills. In the first two years of medical college, most of the students face some struggles like the need of student directed learning, multiple study sources, and non- academic skills such as teamwork, presentation skills and discussion skills. According to the study guides of the different subjects and modules of the first two years in medical college, it mostly depends on the lectures prepared and presented by the teaching staff members. The huge number of students in one class (around 200 students) compared to the number of students in school's classes does not allow the students to seek the direct guidance from the teachers and could affect their ability to participate or ask questions when needed. It also has increased the disturbance causing decrease in their attention and attendance. Almost a complete focus on lectures teacher-centered base compared to a minimum focus on different activities, practices, student prepared presentations (SPP), student directed learning (SDL) or problem based learning (PBL) explain the low number of activists. Based on that, senior students volunteered to establish courses and programs to explain the challenging life in medical college to the junior students.

Table 2: Activities that suite each learning style[2].

Learning style	Activities	Virtual Learning Environment (VLE) Opportunities
Activist	• brainstorming • problem solving • group discussion • puzzles • competitions • role-play	• Interactive learning • Group work opportunities • Communication and virtual classroom (Chat)
Theorist	• models • statistics • stories • quotes • background information • applying theories	• Concentrate on concepts and theories presented in a variety of ways • Discussion groups could facilitate more thorough debate around theories than in a time-limited seminar
Pragmatist	• time to think about how to apply learning in reality • case studies • problem solving • discussion	• Interactive learning • Problem-based learning
Reflector	• paired discussions • self analysis questionnaires • personality questionnaires • time out • observing activities • feedback from others • coaching • interviews	• Problem-based learning • Presentation of content from a variety of perspectives • Discussion groups allow asynchronous communication - time to reflect before contributing

This is under the umbrella of the faculty supervision and awareness. For example, "Teach me Medicine" which is an introductory course prepared and presented to the new second year students by the previous second year students to introduce them to the medical life and give them some advices from their own experiences. Other course called "Preclinical course" prepared and presented by the newly graduated students to the new fourth year students to explain the nature and requirement of the first clinical year (fourth year). Many students depend on the seniors' experiences to make their study life easier, clearer and more enjoyable. Unfortunately, any new changes in the curriculum usually become a big challenge for the junior students.

Focusing on the strong points of each styles can be very beneficial to the student to get better educational and clinical outcomes. According to our results inverted from Honey and Mumford analysis, many of the studentsprefer to observe and collect the data before they act. That point might be very helpful before taking any important decisions.

On the other hand, some of the studentsprefer to try out new things and act immediately before taking long time to think which also can be useful in taking urgent and critical decisions.

Some studentsprefer to understand the theory behind every action while others are bothered by theories and care more about the application of these theories on real life. All of them can do very well if they get support and encouragement touse their learning preference to achieve their goals. Some of the activities that can help are listed in Table 2. These results may change in the future after transition to the clinical years that depend more on observation and doing rather than listening. This will also be of our interest and shall be the focus of the future work plan.

CONCLUSION

Learning styles is essential for both the students and teachers. Informing the teachers about the results and the preferred activities for each learning style could cross the gap by helping them in planning the courses and modulating their teaching styles to match the variations of students learning styles. Teaching staff members could also encourage the students to use their predominant learning style without directing them to the traditional methods. By achieving that, teaching staff members can broaden the horizon for studentsto be professional lifelong learners.

Limitations

Difficulty in the distribution of the questionnaires, due to lack of awareness about the importance of the research from the students. Finding the proper time to distribute the questionnaire was also a big limitation because of the students' busy schedule that was full of lectures and exams.

Conflict of Interest

The authors have no conflict of interest.

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Appendices

Honey and Mumford learning style questionnaire with a brief description of each learning style.

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Supplimentry Data:

Learning Styles Questionnaire
by Honey & Mumford

This questionnaire is designed to find out your preferred learning style. Over the years you have probably developed learning habits which help you benefit more from some experiences than others. Since you are probably unaware of this, this questionnaire will help you pinpoint your learning preferences, so that you are in a better position to select learning experiences to suit your style.

There is no time limit to this questionnaire. It will probably take 10-15 minutes. The accuracy of the results depend on how honest you can be. There are no right or wrong answers. If you agree more than you disagree with a statement, put a tick by it. If you disagree more than you agree put a cross. Be sure to mark each item either with a tick or a cross.

☐	1	I like to be absolutely correct about things.
☐	2	I quite like to take risks.
☐	3	I prefer to solve problems using a step by step approach rather than guessing.
☐	4	I prefer simple, straightforward things rather than something complicated.
☐	5	I often do things just because I feel like it rather than thinking about it first.
☐	6	I don't often take things for granted. I like to check things out for myself.
☐	7	What matters most about what you learn is whether it works in practice.
☐	8	I actively seek out new things to do.
☐	9	When I hear about a new idea I immediately start working out how I can try it out.
☐	10	I am quite keen on sticking to fixed routines, keeping to timetables, etc.
☐	11	I take great care in working things out. I don't like jumping to conclusions.
☐	12	I like to make decisions very carefully and preferably after weighing up all the other possibilities first.
☐	13	I don't like 'loose ends', I prefer to see things fit into some sort of pattern.
☐	14	In discussions I like to get straight to the point.
☐	15	I like the challenge of trying something new and different.
☐	16	I prefer to think things through before coming to a conclusion.
☐	17	I find it difficult to come up with wild ideas off the top of my head.
☐	18	I prefer to have as many bits of information about a subject as possible, the more I have to sift through the better.
☐	19	I prefer to jump in and do things as they come along rather than plan things out in advance.
☐	20	I tend to judge other people's ideas on how they work in practice.

Scoring

For each question you ticked on the other sheets, put a '1' beside the question number on this sheet. Put nothing for crosses. Add up the 1s in each column.

1	4	2	11
3	7	5	12
6	9	8	16
10	14	15	18
13	20	19	21
17	24	23	25
22	27	26	29
28	31	35	30
38	34	36	32
39	37	40	33
Theorist	Pragmatist	Activist	Reflector

Theorist

Intellectual, rational, and objective. Theorists assimilate facts into coherent theories, analysing and synthesising until a rational conclusion emerges. They tend to be detached and prefer to maximise certainty.

Pragmatist

Expedient, realistic, and practical. Pragmatists are keen on trying out new ideas and techniques to see if they work in practice. They act confidently on practical ideas that attract them, and are impatient with ruminating discussion.

Activist

Sensation seeking, impulsive, extrovert, and optimistic. Activists act first, consider consequences later, and tackle problems by brainstorming. They thrive on new challenges, but are bored with implementation.

Reflector

Cautious, methodical, and introverted. Reflectors prefer to stand back and collect data, before thorough thinking leads to a conclusion, often postponed for as long as possible, which will integrate the views of others as well as their own.